

acters given previously. I have collected *gravid females* as early as Aug. 31. *Glochidia* were observed first on Sept. 2, so that the breeding probably begins toward the end of August. Discharge of glochidia has been seen from May 11 to May 24, and a single discharging female was found on July 5, probably exceptionally belated. My extreme measurements of the *glochidia* are: L. 0.21 to 0.23, H. 0.27 to 0.30 mm.

EURYNIA (MICROMYA) VANUXEMENSIS (LEA). Ortman, l. c., p. 530.)

Anatomy: see Ann. Carn. Mus. 8, '12, p. 342, and NAUTIL. 29, '15, p. 65.

Earliest date for gravid females Sept. 2; for glochidia Sept. 17. Discharge from May 15 to May 25.

(The species of the genus *Truncilla* will be treated in a separate paper.)

MODIOLUS DEMISSUS DILLWIN, IN SAN FRANCISCO BAY.

BY G. DALLAS HANNA.

One of the supposedly accidental introductions of animal life from the east to the west coast of North America with the extensive attempts to transplant the oyster was the plicated mussel, *Modiolus demissus*. It was first recorded from the new location by Stearns in 1899 (NAUTILUS, XIII, p. 86) from specimens collected by R. N. Drake in 1894 at a point "3 miles north of Stanford University," that is, the southern part of San Francisco Bay. The record was repeated by the same author in April, 1900 (*Science*, n. s., XI, p. 658).

"Fine specimens" were again collected, apparently from the same colony, by Doe and Gifford, and recorded by Keep in April, 1901 (NAUTILUS, XIV, p. 115). In his "West Coast Shells," Revised edition, p. 37, 1911, the same author states, "It doubtless came to California with seed oysters which were planted in San Francisco Bay, where it may now be found in considerable numbers."

In his checklist Dall merely states that it is found on the oyster beds of the Bay (*Checklist of Recent Bivalve Mollusks of the N. W. Coast*, p. 18, 1916).

Packard (*Univ. of Calif. Publ. Zool.*, Vol. 14, No. 2, p. 257, 1918) states in his report on the mollusca obtained by the U. S. Bureau of Fisheries Survey of San Francisco Bay that, "Although it was not taken by the Survey it is reported to occur within the lower division of the Bay in sufficient numbers to be marketed occasionally."

The above is a review of all of the published records of the species on the west coast which are known to the writer. Mrs. Ida S. Oldroyd tells me she received specimens some years ago collected by Fred L. Button at Alameda. Henry Hemphill made wonderful discoveries during his extensive collecting on the eastern side of the Bay, among other things, the sand clam, *Mya arenaria*, but his collection does not contain a specimen of the plicated mussel from any west-coast locality. So it may be inferred that he did not find it.

Its extensive spread in the bay region however cannot be doubted. Through Mr. R. A. Coleman the California Academy of Sciences recently received 18 beautiful specimens of this mussel. They were taken at Bay Farm Island about one mile south of Alameda on the eastern side of the Bay. They were found living on the mud flats in very considerable numbers attached to the roots of *Spartina stricta maritima*, determined by Miss Alice Eastwood, locally known as wild rice. It is said to be occasionally brought into the markets from this locality.

Mr. Coleman states that the mussels were delicious eating. Many of the shells are over a hundred millimeters long and as much as fifty millimeters wide. The epidermis has a very high polish and the umbones have been only slightly eroded, in many cases none at all.

Those persons anxious to learn how long it takes to develop a variety, subspecies or species may well keep watch of *Modiolus demissus*.